

ACADEMIC STUDIES

IN EDUCATIONAL SCIENCES

IN EDUCATIONAL SCIENCES

Editors

Harun ŞAHİN
Nihada DELIBEGOVIĆ
DŽANUĆ

2018



Cetinje 2018



ISBN 978-9940-540-37-1

ACADEMIC STUDIES

IN EDUCATIONAL SCIENCES

Editors

Harun ŞAHİN & Nihada DELIBEGOVIĆ DŽANIĆ

Cetinje 2018



Editors

Assoc. Prof. Harun ŠAHIN, Ph.D.
Assoc. Prof. Nihada DELIBEGOVIĆ DŽANIĆ, Ph.D.

First Edition • © September 2018 /Cetinje

ISBN • 978-9940-540-37-1

© copyright

All Rights Reserved

Ivpe

web: www.ivpe.me

Tel. +382 41 234 709

e-mail: office@ivpe.me



Print

Ivpe

Cetinje, Montenegro

CONTENTS

| | |
|---------------------|------------|
| Preface..... | III |
|---------------------|------------|

| | |
|---------------------------|----------|
| Referee Board..... | V |
|---------------------------|----------|

COMPUTER AND INSTRUCTIONAL TECHNOLOGIES EDUCATION

| | |
|---|----------|
| Zeynep TAÇGIN / <i>Proposing an Instructional Design Model with Designing and Developing Sensory Immersive Vrle to Teach Concepts and Procedures</i> | 3 |
|---|----------|

MATHEMATICS AND SCIENCE EDUCATION

| | |
|---|-----------|
| Nuri Can AKSOY / <i>The Effect of Teaching Graphs of Functions with The Different Technological Applications on Student Achievement.....</i> | 31 |
|---|-----------|

MUSIC EDUCATION

| | |
|--|-----------|
| Burcu AVCI AKBEL / <i>Strategies Used By Cello Students While Performing Turkish Music Pieces</i> | 49 |
|--|-----------|

PRE-SCHOOL EDUCATION

| | |
|--|-----------|
| Sema Bengi GÜRKAN & Seda PASİN / <i>The Pre-School Teachers' Opinions on Peer Bullying.....</i> | 73 |
|--|-----------|

BASIC EDUCATION

| | |
|--|------------|
| Sayime ERBEN KEÇİCİ/ <i>Bewertung und Beurteilung Von Lehrkräften</i> | 87 |
| Şermin METİN / <i>Project Based Stem.....</i> | 101 |
| Ramazan TOPUZ / <i>Teaching Passion.....</i> | 115 |

REFEREE BOARD

Prof. Dr. Alena ĆATOVIĆ, University of Sarajevo, Bosnia and Heregovina

Prof. Dr. Anisoara POPA, Danubius University, Romania

Prof. Dr. Ema MILJKOVIC, University of Belgrade, Serbia

Prof. Dr. Erdoğan KÖSE Akdeniz University, Turkey

Prof. Dr. Hasan BABACAN, Burdur Mehmet Akif Ersoy University, Turkey

Prof. Dr. Marija DJINDJIC, University of Belgrade, Serbia

Prof. Dr. Redžep ŠKRIJELJ, Novi Pazar State University, Serbia

Prof. Dr. Sabina BAKŠIĆ, University of Sarajevo, Bosnia and Heregovina

Prof. Dr. Salih UŞUN Muğla Sıtkı Koçman University, Turkey

Prof. Dr. Šerbo RASTODER, Montenegro University, Montenegro

Prof. Dr. Seval FER, Hacettepe University, Turkey

Prof. Dr. Zeki KAYA Gazi University, Turkey

Assoc. Prof. Dr. Abidin TEMİZER, Burdur Mehmet Akif Ersoy University, Turkey

Assoc. Prof. Dr. Damir MATANOVIĆ, Osijek University, Croatia

Assoc. Prof. Dr. Edina SPAGO CUNURIJA, Dzemail Bijedic Mostar University, Bosnia and Heregovina

Assoc. Prof. Dr. Emina BERBIĆ KOLAR, Osijek University, Croatia

Assoc. Prof. Dr. Hale SUCUOĞLU Dokuz Eylül University, Turkey

Assoc. Prof. Dr. Harun ŞAHİN, Burdur Mehmet Akif Ersoy University, Turkey

Assoc. Prof. Dr. M. Ali ÇAKIR, Burdur Mehmet Akif Ersoy University, Turkey

Assoc. Prof. Dr. Mirza DŽANIĆ, Tuzla University, Bosnia and Heregovina

Assoc. Prof. Dr. Naka NIKŠIĆ, University of Belgrade, Serbia

Assoc. Prof. Dr. Nihada DELİBEGOVIĆ DŽANIĆ, Tuzla University, Bosnia and Heregovina

Assoc. Prof. Dr. Özlem TAGAY, Burdur Mehmet Akif Ersoy University, Turkey

Assoc. Prof. Dr. Sanja BERBEROVIĆ, Tuzla University, Bosnia and Heregovina

Assoc. Prof. Dr. Vesile YILDIZ DEMİRTAŞ Dokuz Eylül University,
Turkey

Asst. Prof. Dr. Dimitar V. ATANASSOV, Sofia University, Bulgaria

Asst. Prof. Dr. Eman HAYAJNEH, Jordan University, Jordan

Asst. Prof. Dr. Marijan PREMOVIĆ, Montenegro University, Montenegro

MUSIC EDUCATION

STRATEGIES USED BY CELLO STUDENTS WHILE PERFORMING TURKISH MUSIC PIECES

Burcu AVCI AKBEL*

Introduction

The inadequacy of the conventional instructional method which follows an instructor-oriented approach and ignores individual differences in learning has led to exploration and implementation of new approaches in the field of educational sciences. There are quite a large number of studies carried out in the recent years on the quickest and the most effective way of learning. “Education and training are now considered as a process of facilitating learning and helping the student in structuring their own knowledge, sense-making or interpretation in respect of the outer world during their learning” (Sünbül, 2011: 146). This is more clearly the case with music education institutions, and more particularly with individual instrument classes. Individual differences should be taken into consideration in individual instrument classes; the strategies chosen by students in the process of performing the instrument, the circumstances in which they choose such strategies and the conditions under which they can learn better should be elaborated on. Indeed, the techniques and strategies used by students when playing their instruments significantly influence their performance and progress. Strategy generally refers to a path followed to achieve something or implementation of a plan developed to reach a goal (Açıkgöz, 1996). In line with this definition, instrument playing strategy can be defined as the path followed to be able to play an instrument or implementation of the plans developed. It has been observed that cello students studying Turkish Music education refer to numerous ways in order to be able to display a good instrumental performance. This study is based upon the fact that students follow a variety of different pathways by making different plans to attain the same goal.

The aim in the first year of the cello education provided at Turkish Music conservatories is to ensure that the student is equipped with fundamental technical knowledge. Whereas, Turkish Music pitches, Turkish Music *usuls*, Turkish Music *maqams*, individual characteristics - style elements are in the forefront during subsequent years of cello education. In this sense, cello classes are usually held by performing Turkish Music pieces - paying regard to the mentioned points -. However, the fact that Turkish Music pieces are not composed specifically for one instrument and there are no methods or certain absolute rules for cello

* (Dr. Öğr. Üyesi); Yıldırım Beyazıt Üniversitesi, Türk Musikisi Devlet Konservatuarı, burcuavci812002@yahoo.com

education in Turkish Music requires development of a number of strategies to perform the pieces on the cello. Therefore, it has been revealed that students determine and/or use strategies for performing Turkish Music pieces in addition to the learning strategies known in the literature. At this point, it is of importance to reveal the strategies determined and used by students in the performing process.

There are numerous studies in the literature on the learning strategies used by musicians (Weinstein & Mayer, 1986; Kocabaş, 1995; Nielsen, 1999a; Nielsen, 1999b; Maris, 2000; Hagans, 2004; Cangro, 2004; Nielsen, 2008; Yokuş, 2009; Uygun and Kılınçer, 2012; Akın, 2013; Deniz, 2015; Kocaarslan, 2016; Uygun and Kılınçer, 2018). In addition to the studies on the learning strategies, there are also studies performed on the strategies used by musicians in hearing (Seppänen, Brattico & Tervaniemi, 2007) or music practice or performance (Geiersbach, 2000; Hanberry, 2004; Jørgensen, 2004; Martin, 2005; Kenny, 2006; Nielsen, 2004; Sikes, 2013). However, despite the very few studies in the literature on the use of strategies in Turkish Music (Uygun, 2017), no study has been found in respect of the strategies used in performance of Turkish Music pieces on the cello. This study is based upon the argument that there are few and deficient studies on the use of strategies in the field of instrumental performance in Turkish Music, and it is aimed at revealing, examining and assessing the strategies used by students while playing the cello.

Quantitative research method is usually employed for the studies in this field. (Akın, 2013; Çelikkaya, 2010; Karasakaloğlu, 2012; Kuzu, Balaman and Canpolat, 2014; Şara, 2012). Additionally, there are studies structured as a form of qualitative analysis. (Taşçı and Soran, 2012; Altıntaş, Kabaran and Kabaran, 2016). The questions of which strategies are determined and/or used for cello performance in Turkish Music, in which circumstances and how the determined strategies are used can only be answered through a qualitative research. Therefore, this study is structured as a qualitative study. The study has primarily revealed the strategies used by students; the data obtained were subject to an in-depth analysis on the basis of both students and groups categorized by level of instrumental control.

2. Purpose of Study

This study is aimed at identifying the cello playing strategies used by cello students studying at Turkish Music Conservatories and revealing how learning happens by this way and what pathways are followed during learning. Thus, the aim is to contribute to the progress of students who know or are capable of thinking on by which method and how they need to play their instrument, and can achieve success in a quick and effective

manner by using strategies. In this context, answers are sought to the following questions: As for students,

- What are the problems and challenges they encounter when performing Turkish Music pieces?
- What are the performance strategies they develop or use for mitigating the challenges experienced or correcting the mistakes done?
- What are the performance strategies they develop or use in order to be capable of performing at an advanced level?

3. Methodology

3.1. Research Pattern

This research is a case study. According to Merriam (1988), case study is one of the systematic types of pattern involving collection, organization and interpretation of data and access to research findings. Köklü (1994) examined case studies in four categories, which are: ethnographic, evaluative, instructional and actional. This research can be classified as an instructional case study.

3.2. Study Group

The study group consists of nine cello students studying Turkish Music education. Maximum variation sampling, which is a purposeful sampling strategy, is used in the study. The basic purpose of use of this sampling method is “to reveal common or divergent aspects between varying circumstances which are determined to be consistent with the purpose of the study and thus to describe the problem in a wider framework” (Büyükoztürk et al., 2010). Sampling variation in this study is provided by creating a study group consisting of cello students of different ages, genders and instrumental control levels studying at different classes in different regions of Turkey. The study group consists of three different levels in terms of instrumental control, which are beginner level (G1, G2, G3), intermediate level (G4, G5, G6) and advanced level (G7, G8, G9).

Table 1. *Details of participants*

| Participant's Identification Code | Date of Birth | Region in which their University is Located | Gender | Professional Experience | Date of Interview |
|-----------------------------------|---------------|---|--------|-------------------------|-------------------|
| G1 | 1994 | Southeastern Anatolia Region | Female | Undergraduate 3 | 29.06.2018 |
| G2 | 1997 | Southeastern Anatolia Region | Female | Undergraduate 1 | 02-03.07.2018 |
| G3 | 1995 | Southeastern Anatolia Region | Male | Undergraduate 2 | 04.07.2018 |
| G4 | 1994 | Central Anatolian Region | Female | Undergraduate 3 | 18-25.05.2018 |

| | | | | | |
|----|------|--------------------------|--------|-----------------|---------------|
| G5 | 1993 | Central Anatolian Region | Female | Undergraduate 4 | 25.05.2018 |
| G6 | 1989 | Central Anatolian Region | Female | Undergraduate 4 | 11-25.05.2018 |
| G7 | 1993 | Aegean Region | Female | Graduate | 18.06.2018 |
| G8 | 1985 | Aegean Region | Male | Undergraduate 4 | 28.06.2018 |
| G9 | 1990 | Aegean Region | Male | Graduate | 26.06.2018 |

Note: All participants are studying in universities in Turkey.

3.3. Collection of Data

Interview technique and think-aloud technique is used in the examination of cello playing strategies of the students studying Turkish Music education. Steward and Cash (1985) describe the interview technique as “a reciprocal and interactive process of communication which is predetermined and held for a serious purpose and based on questioning and answering”. The semi-structured interview technique prepared by the researcher was used in this study; audio recordings of the interviews held were made via a voice recorder - the participants were asked for their consent earlier- .

The think-aloud technique is commonly used in the assessment of cognitive and meta-cognitive strategies. The think-aloud technique is described as an evaluation technique by which participants directly and verbally express their opinions during the tasks they were given. (Swanson, 1990; Sweeney, 2010; Veenman and Spaans, 2005). Video recording of the students was made as they deciphered a musical piece that they were unfamiliar with. After the recording, the students were asked to watch the video record and to express their opinions, which was also recorded. An audio recording of the opinions expressed by the students while watching their own video recording was made - the participants were asked for their consent earlier-.

3.4. Analysis of Data

Voice records of the interviews took approximately 20-25 minutes. The audio recordings both during the interview and think-aloud processes were transcribed. The data acquired were analyzed through content analysis method. Content analysis is defined as “a careful, detailed and systematic review of a specific material in order to identify patterns, themes, biases and meanings”. (Berg & Latin, 2008; Leedy & Ormrod, 2005; Neuendorf, 2002). ATLAS.ti8 qualitative data analysis software was used for the analysis of qualitative data.

4. Findings

The findings obtained in scope of this study are analyzed under two themes as the strategies to mitigate the challenges experienced and the advanced level performance strategies.

4. 1. Strategies to Mitigate the Challenges Encountered

This section reveals the situations or subjects in which the participants most often encounter challenges, make mistakes and have difficulties while performing Turkish Music pieces on the cello and which strategies and techniques they use to solve such problems regarding the said subjects, situations or passages. The categories examined under this theme are listed from the highest to the lowest number of strategies developed for them.

4.1.1. Strategies to Mitigate Challenges in Certain Parts

The strategies to mitigate challenges in certain parts are most commonly addressed by students; a high number of strategies are developed on this subject. With regard to the subject, G1 stated that she has too much difficulty with ‘transposition’ and ‘performing Turkish Music pitches properly’, that she needs to listen to the related genre of music and practice etudes a lot to overcome this problem; but she cannot do it - as she does not like Turkish Music -. G2 and G3 stated that they have a quite systematic progress in performing the pieces, therefore they cannot provide the musicality required for the pieces. Although the mentioned students think that what they primarily need to do in order to overcome such problems is to listen to the related genre of music, they reported that they do not adequately listen to that genre.

G4 has difficulty with playing open positions, certain *usuls* and rhythms, slowing down the tempo and playing the nuances. In order to overcome the said problems, G4 usually refers to a number of ways such as trying to find the same note on high and low pitches, making lots of repetitions, practicing chords, practicing with a metronome and listening. G5 has difficulty with open positions, transitions between positions, 5. 6. 7. positions and correct intonation. In order to overcome the said problems, G5 refers to a number of ways such as practicing by going through line by line and bar by bar, practicing at a slower tempo, making repetitions, practicing the difficult part on low pitches which she feels she has more control on, practicing with a metronome, focusing on practicing other parts to forget the challenging part and then turning back to that challenging part. G6 stated that she has problems with open positions, correct intonation, certain *usuls* and rhythms, the fourth position and agility. In order to overcome the said problems, G6 refers to a number of ways such as practicing section by section, practicing at a slower tempo, practicing solfege, continuously counting inside, avoiding open positions as much as possible, influencing her mental state by the thought that she will be able to overcome those problems, intensely practicing on the problematic part and repeating that part after correcting it, noting down the problematic part and making mental repetitions. When G6 was asked why she avoided using open positions, she stated as follows: “I usually change positions without

using open positions. For half positions, I prefer changing positions in order to avoid open positions; this may cause notes to become sharp as they are close to each other.” Regarding taking breaks, G6 stated: “I think that taking breaks is good for mind and muscles. I do not take a break before a 45- 50 minute practice ends unless I have pain in my muscles; but I certainly do take a break if I have failed to make progress in a particular segment and I have overpracticed it. I certainly do better when I turn back to that problematic part after taking a break.” It can be concluded from this statement that the student G6 knows herself well, she is capable of thinking strategically to solve the problems she experienced and implementing the strategies she developed. As it will be understood from the foregoing statements, intermediate level students developed strategies in technical, musical and motivational terms.

G7 stated that she has difficulty with transposition of Hüzam *maqam* and *taksim* performances. G7 reported that she refers to a number of ways for solution of the said problems, such as practicing the challenging part at a slower tempo, practicing with different motifs, making repetitions on the part where she makes mistakes, listening to the related genre, memorizing *taksims* and imitating. To clarify G7’s expression “practicing with different motifs”, it is worth noting her opinions on the subject. G7 explained it as follows: “I sometimes practice the parts that I have difficulty with by using different motifs. For example, I can play eighth or fourth notes instead of sixteenth notes. I apply this method to fix rhythm problems, and avoid monotony and getting bored”. G8 stated that he has difficulty with the seventh position and thumb positions. In order to facilitate such problematic parts, G8 refers to a number of ways such as practicing pieces containing similar type of challenging parts, making repetitions, memorizing and practicing section by section. G9 stated that he may experience problems with deciphering pieces in *maqams* that he is unfamiliar with, or certain rhythms and written legatos. Regarding the solutions he applies to make the problematic parts easier, G9 stated as follows: “I practice problematic parts by repeating them, trying different bowing styles, different finger numbers and different rhythms - dotted eighths or fourths - for those parts. I start playing the problematic parts at a very slow tempo and then gradually speed up. Also I sometimes practice with a metronome.”. With regard to legatos, G9 said that he initially perform the entire piece by using the detaché technique first and then legatos. It is noteworthy that advanced level students report a number of technical difficulties rather than musical challenges. On basis of the foregoing, it can be said that the strategies developed for musical performance by advanced level students, who develop a large number of strategies for that purpose, help them achieve successful results.

4.1.2. Strategies to Correct Intonation Mistakes

During the interviews held, it was revealed that beginner and intermediate level students not only encounter intonation problems but also fail to notice such intonation problems. For example, G2 stated that: “I sometimes can’t notice my mistakes and incorrect intonations. Then I use a tuner to play the notes by checking them”. G3 stated that: “To make sure that I play with correct intonation, I accompany records of some musical pieces and I record my own performance. I can hear the incorrect intonations better when I listen to my recorded performance. I listen to the same incorrect part over and over to train my ear for the right notes. I repeat playing that one specific part from the beginning until I play it correctly.” As is seen, beginner level students rather focus on noticing intonation problems. Regarding the subject, G4 stated as follows: “While tuning the instrument and practicing, I sometimes try to find the perfect tune by playing some incorrect pitches. I mean, there are times when I try to find the correct note trying lots of other notes and moving my fingers on the fingerboard. And playing chords help me find the correct intonation”. From the above mentioned statements of G4, it is concluded that she is still having problems mastering the left hand position patterns and experiencing technical challenges. Regarding the same subject, G6 reported that she plays the parts with intonation problems over and over and finally she can correct the intonation on that part if she remains patient enough to repeat that specific part until she gets the perfect pitch. Like G6, G5 also corrects the intonation problems through repetition method. However, G6 indicated that, in addition to repetition, she also uses strategies such as recording her performance and checking the notes on the closed positions by comparing them to the same notes on the open position, and she finds this strategy quite helpful in correcting the intonation. On the other hand, it was revealed that advanced level cello students do not encounter too much intonation problems.

4.1.3. Strategies to Correct Rhythm - *Usul* Mistakes

Usuls and rhythms of Turkish Music usually constitute a challenge for students. The interviewed students use different strategies to correct the rhythms and *usuls* which they have difficulty with. For example, G1 said: “I ask my instructor for help in correcting difficult rhythms, and listen to my instructor’s performance to correct my mistakes.” G3 reported his opinion as follows: “I imitate. When I incorrectly play what I hear, I listen to a record of that piece and correct my mistake by viewing and hearing its rhythm as it is supposed to be.” As is seen, beginner level cello students experience problems with rhythms and *usuls* and try to solve such problems by asking their instructor, listening and imitating. G4 stated that she performs *usuls* by practicing solfege to overcome the difficulties she

experiences in rhythms and *usuls*, while G5 prefers correcting the problematic parts through repetition. Regarding the same subject, G6 reported as follows: "Recording helps me notice and correct my rhythmic imperfections. And if I prepare for a piece containing quite different rhythms, I certainly listen to that piece earlier. Finally, I think that listening to and accompanying pieces will contribute to mastering the *usul* in the piece.". During the interviews, it was revealed that all of the intermediate level cello students experience problems with *usuls* and rhythms. However, G6 was found out to use more strategies than her other friends and prefer solving her problems in a quicker and rational manner. Advanced level students reported that they usually do not experience problems with *usuls*.

4.1.4. Strategies to Overcome Technical Difficulties

It was revealed that strategies to overcome problems related to violoncello technique are most commonly developed by intermediate level students. As the beginner level students have not completed their education in terms of cello technique, they are not competent enough to develop a strategy on the subject, and this is considered as the reason why they did not declare any opinion on the subject. Of the beginner level students, only G2 stated opinion on posture - holding. G2 stated that her wrist pain makes her understand that she has incorrect posture - hold; and that she practices in front of a mirror and does finger exercises as a strategy to correct the posture and hold. With regard to incorrect posture - hold, G5 stated: "While playing, I try to make sure that I hold my hand, arm and elbow in a correct position. When I apparently have an incorrect posture or hold, which I will already feel, I pay attention to ensuring correct posture and hold". G6 reported that she watched videos of professional cellists and kept their posture and hold in her visual memory, and tried to correct her mistakes by comparing those visual images to her own posture and hold while practicing in front of a mirror.

With regard to technical problems, G4 reported: "I don't try hard to solve my technical problems. I feel as if they would require me to practice a lot on them, and they really do". This statement of G4 can be interpreted to conclude that she does not consider technical practice important or she does not want to exert effort. G6 reported: "I know my technical mistakes but I can't correct them when playing the cello. I think that the way to overcome technical flaws is to practice etudes. I can't specifically focus on the technique while performing the pieces. I have more time to think about the technical requirements that I need to fulfill in boring passages of etudes". G6 often mentioned during the interview that she considers technical practice important. To overcome her technical problems, G6 follows the strategy of thinking over practicing etudes and technical

requirements that she needs to fulfill. It was revealed that advanced level cello students do not experience too much technical problems.

4.2. Advanced Level Playing Strategies

According to the data obtained from the interviews, advanced performance strategies are categorized under three themes, which are: 'strategies related to the factors determined by the performer', 'strategies related to musical performance ability' and 'time saving strategies'. These categories are examined by listing them from the highest to the lowest number of strategies used for them.

4.2.1. Strategies Related to the Factors Determined by the Performer

As Turkish Music pieces are not composed for a specific instrument, instrumental characteristics are determined by the performer before or during the performance. On basis of the information acquired from the interviews held under this study, the category of 'factors determined by the performer' is examined under two sub-categories as 'writing finger numbers' and 'writing legatos'. It was found out that the categories of writing finger numbers and writing legatos are considered by students as achievements requiring high skills. Beginner level students reported that positions, finger numbers and legatos are usually determined by their instructors and thus the students themselves could not develop a strategy on the subject.

4.2.1.1. Finger Number Writing Strategies

This is the category which is most commonly addressed, coded and subject to the highest number of strategies used. This section will examine which factors are taken into consideration by the participants in writing the finger numbers and which strategies they use. On this subject, G4 reported: "I try to find the positions on basis of minimum movement. For example, I choose random positions in my mind for a specific musical piece and write down the finger numbers on the note. I further think about which other positions might be feasible. I replace the technically poor positions by more feasible ones". G4 finds the finger numbers by trial and error method on basis of the 'minimum movement' principle. On the same subject, G5 stated as follows: "While determining the finger numbers, I take minimum effort as basis, as a hard position already sounds bad. While playing, I try to determine the finger numbers that offer most effortless and easiest playing experience. When writing the positions, I usually think like 'the positions should be comfortable, they should not require too many transitions from note to note with an intervening silence, the notes should be tied together', and so on." With the expression 'effortless', G5 means ease of movement rather than minimum movement in transition between

positions. The foregoing statements manifest that G5 takes ease of transition between positions and smoothness of movements into consideration. Like G4, G6 also reported that she determines finger numbers by trial and error method and plays the same bar over and over again in order to find the correct finger numbers. Unlike the other participants, G6 stated: "I take a number of factors into account while writing the finger numbers, such as whether a piece starting from Neva pitch goes to Gerdaniye pitch or makes a progression to the resting note. ". This statement of G6, indicating that she writes the finger numbers by paying attention to which pitches the piece the musical piece moves on and to the distance between the notes, shows that she is using an advanced level strategy on this subject.

All of the advanced level cello students mentioned about the finger number writing strategies that they often use during the interviews. G7 writes finger numbers by using strategies such as taking the instructor's lessons as examples, easiness, avoiding open positions as much as possible, etc.. As is seen, G7 aims to achieve a good sound as well as positions that can be easily played. On the subject, G8 reported: "I am careful not to steer away from Western music. I pay effort to use as many positions as possible. I think the 1st position alone is not appropriate for academic performance. I try to avoid playing the notes on open strings - although it is easier to do - as they don't have a good timbre. I care about academic performance and good timbre". It is remarkable that G8 used the expression 'academic performance' a lot and often stated that playing the notes on the 1st position is not appropriate for academic performance. From the questions directed, it was understood that this expression stated by G8 refers to 'the ability to effectively use the techniques taught in Western Music'. It was revealed that G8 considers musical performance to be of higher importance than easiness in writing finger numbers and he follows a strategy which involves using as diverse positions as possible. Finally, G9 reported that he writes finger numbers by taking into consideration the factors such as easiness and playing legato, and determines the positions by sureness about (the individual's control over) the position and integrity of the meaning. In order to play the notes rather in a legato style, G9 follows a number of ways such as avoiding too much transition between strings, and preparing the left hand before transition to the following position. As is seen, all of the advanced level cello students followed a strategy that gives priority to musicality when determining positions and finger numbers, and ensures that they are kept in memory without being written.

4.2.1.2. Legato Writing Strategies

This category is aimed at revealing what kind of strategies are developed in creating the legatos used. Intermediate level students are

divided into two sub-groups, including students who do not pay attention to legatos and students who develop strategies on the subject. Regarding the subject, G4 reported: "I try to write a piece with a time signature of 4/4 in 2/2 time in legato style. I write legatos thinking that 'there are triplets, so it would sound better if this was arranged in that particular way'". With this statement, G4 indicated that she determined legatos by taking *usuls* or rhythms as basis. On the same subject, G6 stated as follows: "When practicing a piece, I can pay attention to legatos if there are legatos written on the notes. But if legatos are written after I finished practicing a piece, I cannot do the legatos. Although I think that I must write legatos first in order to learn the piece, I first write the finger numbers when I am given a musical piece". G6's finding that she can be successful playing the piece if she writes the legatos earlier is noteworthy. On basis of the opinion that it is hard to break habits, G6 mentioned that reinforcement by playing legatos and finger numbers determined at the beginning is feasible for her. This finding serves as a suggestion for prioritization of writing legatos, which is always postponed by beginner level cello students.

As an advanced level student, G7 stated: "I play with my own style when I'm on my own. But I have been joining choirs more often lately, so I usually try using legatos which vary depending on the *usul* and have become a classic. I try to play with the legatos used by violins at choirs". The statements of G7 can be interpreted to mean that she does not much consider legatos important or she fails to rationalize creating those legatos. On this subject, G8 reported as follows:

"I try playing legatos or staccato or use *detaché* technique in some parts. Instead of slurring over a motif, I prefer playing it bar by bar, enjoying every part of it. I try to tie notes according to the rhythm. I usually try to start and end the movement by bow pull. If the movement isn't suitable for this movement and the piece requires a different stroke technique or has a different time signature, I start the accented stroke by bow pull. For *curcuna usul* with a time signature of 10/8, I play the beats as 3 pulls, 2 pushes, 2 pulls and 3 pushes. I start again with a bow pull at the beginning of the bar. There are certain classical patterns which I instantly remember as soon as I see the piece. There may be exceptions, as well. In such cases, I pay attention to use a bow pull for the accented stroke.

Regarding the point addressed, G8 was observed to determine the legatos according to the *usul*. He uses certain legatos for certain *usuls*, and applies bow pull for the accented stroke in other exceptional cases. As stated by G8, the strategies that have become easily memorable after numerous uses save the effort of planning over and over again how to use the legatos for each individual piece. This enables G8 to save time and

focus on other features of the piece within a shorter time. On the same subject, G9 reported as follows:

“I apply legato, detaché bow, staccato, portato techniques when playing the pieces. If I know the source, history and identity of the piece I can write suitable legatos for that piece at that moment. But it is actually more appropriate to write the legatos after listening to the piece and understanding what kind of a melodic pattern it requires. A legato style which I fancy today may sound unappealing to me tomorrow. Therefore, I may have to change the legatos even when I start creating the nuances at the performance phase.”

G9, like the other students at the same level as him, indicated that he determines legatos not according to the *usul* but writes them at that moment according to how the piece sounds and what features it has. However, G9 reported that factors like tastes of individuals changing over time are influential in determining the legatos, which is interesting both in musical terms and in terms of changing tastes. The given statements clearly manifest how diverse criteria are taken into consideration for writing legatos in cello performance in Turkish Music.

4.2.2. Strategies Related to Musical Performance Ability

It was revealed that all of the participants pay attention to the notion of ‘musical performance ability’; however, the strategies on this subject are most commonly developed by intermediate and advanced level students. Regarding the subject, G1 stated as follows: “I think that a good performance of Turkish Music requires listening, a good knowledge of *maqams*, imitating and the ability to reflect the feeling of the piece. I start practicing with my favorite pieces. I can’t play the others beautifully because I see them merely as tasks and cannot feel them”. With her foregoing statement, G1 puts forward a different point of view, noting that musical performance ability is closely related to the personal interest in the musical piece to be performed. Whereas, G3 stated: “Currently I’m not doing anything to play with better musicality”, which points out to the fact that he considers intonation of the highest importance, and legatos of the lowest importance for musicality.

With regard to ‘musicality’, G4 expressed her own personal sense of musicality by stating that she pays attention to the ability to reflect the *maqams* properly, not to nuances. Whereas, G5 reported: “When performing the pieces, I concentrate on how I can reflect the feeling of the *maqams* and how I can increase the intensity of that feeling after I have fully gained the ability to perform Turkish Music pitches with correct intonation and in the correct *usul*. I do these by listening and repeating.” On the same subject, G6 stated: “If, for example, there is a *maqam geçki* in a certain section, I try to give the exact sound and feeling for that specific

section by changing either the finger number or the position or trying other different things. Apart from these methods, I watch the performers whose cello performance I trust”. From this statement, it is understood that G6 keeps changing the strategies until she achieves her aim.

On the same subject, G7 stated that she prefers closed positions, listens to the related genre a lot, and accompany other instruments in order to play with musicality. G8 stated: “Memorizing a piece is quite useful in the sense that the performance will not be dependent merely on the notes, and better performance can be ensured with precise accents and frequency ranges. Also, listening and hearing your own performance are highly important to play the accents accurately.”. This statement points out to the significance of memorizing and listening. G9, on the other hand, approaches musicality from a different perspective, stating:

“Once I have started deciphering the piece, I think over a number of questions such as ‘In which register should I play the piece? Between G bow and D bow, or only G bow? How would it be possible to play that part correctly? Is a muffled tone more effective for the feeling of the piece? Does a powerful performance or a clearer manifestation of that specific part of the piece require staccato or legato? I think over all these criteria when I start deciphering. However, what is more important is reflecting local and periodical characteristics when playing. For this purpose, the performer needs to know the local characteristics well and apply them on the instrument. I especially follow the artists who pay attention to these criteria in their performance. When performing a folk song, the enthusiasm of local performers and the mood of the song shape my decisions on whether to choose a legato or martele bowing technique. If the piece is lively or it has strong accents, I may prefer to use détaché technique rather than using too much legato. The performance is influenced by a number of factors such as having a live recording of the piece, making conversations with the local people performing the piece and hearing the story and learning the lyrics of the song. For example, if I know the story of a folk song, I can really feel its emotion or the tragic atmosphere while playing it.

With this statement, G9 addressed both the technical strategies he uses for musicality and the social factors which he thinks influence the sound. G9 indicated that his performance is shaped by how local characteristics influence his feelings, which emphasizes the fact that musicality is not so much technical or mathematical and every individual performer has their own unique style.

4.2.3. Time Saving Strategies

Time saving strategies are evaluated by the interviewed students with different perspectives and in different forms. For example, G1 stated: “When I want to play a specific piece, I listen to that piece in order to memorize it. I can play a piece within a shorter time after listening to that piece.” The majority of the students perceive the notion of ‘time saving’ as ‘gaining the ability to play a piece in the shortest time’, while G2 perceived it as ‘saving the time spent playing the cello’. G2 reported as follows: “Cello is my life. I don’t save time when playing the cello, saving any moment is bad for me”. This statement of G2 is remarkable in the aspect that it brings a different perspective to the subject.

Regarding the time saving strategies, G4 stated: “I think over not only the positions and legatos but also how to play them better. Actually, I try to do lots of things at the same time. In order to outline the piece in a short period of time, I try to contemplate and apply what I need to do and take into account at the same time.” G5 and G6 also made similar statements.

While, G9 who is an advanced level cello student, reported: “As soon as I get the copy of the piece, I perform a quick sight reading and I try to figure out the difficult rhythms before starting to play the piece. Or I try to find similar rhythms and sentences in the piece from the moment I get the sheet from the library until I get to the practice room. I continue practicing the piece without playing the similar sections”. In addition to the foregoing statements, the majority of the participants stated that they do not place their instruments in the case so that they save time and play their instrument more often with less breaks.

5. Conclusion

The strategies to mitigate the encountered challenges under this study are examined in a number of categories as strategies to mitigate the challenges in certain parts, strategies to correct intonation mistakes, strategies to correct rhythm - *usul* mistakes and strategies to overcome technical difficulties. As for challenges in certain parts of musical pieces, it is thought provoking that all of the beginner level students reported the difficulties they experience in terms of musicality and indicated that they do not pay much effort to overcome such difficulties although they were rather supposed to point out to technical difficulties. Even though they are able to develop strategies as to what they need to do, they cannot put such strategies into practice, which raises question marks in minds. The fact that the beginner level students interviewed are not motivated to overcome the technical difficulties and they have yet to figure out that good musical performance is related to mastering the right technique has resulted in their inability to implement strategies, if any, developed by them for good performance and, a consequent failure in achieving the expected level of

performance. It is observed that a large number of diverse strategies are used by intermediate level cello students to overcome the difficulties they experience, which reveals that this group of students think and act in the most strategic way. Intermediate level cello students usually have problems with open positions, certain *usuls* and rhythms, correct intonation, nuances and agility. With the aim to overcome their problems, this group of students refer to a number of ways, including practicing section by section, practicing at a slow tempo, practicing solfege, repetition, practicing with a metronome, avoiding open positions, taking breaks, influencing their mental state by the thought that they will be able to overcome those problems, intensely practicing on the problematic part and repeating that part after correcting it, noting down the problematic part, making mental repetitions, trying to find the same note on high and low pitches, practicing chords, listening, practicing the difficult part on the positions which they feel they have more control on, focusing on practicing other parts to forget the challenging part and then turning back to that challenging part. As it is seen, it was revealed that intermediate level students develop strategies not only in technical terms but also in terms of musicality and motivation. It was found out that advanced level cello students have difficulties with thumb positions, deciphering pieces in *maqams* that they are unfamiliar with, and certain transpositions of *Hüzzam maqam*. In order to overcome those problems, they refer to methods such as making repetitions, memorizing and practicing section by section, as well as trying different bowing styles, different finger numbers, different motifs and rhythms. It is noteworthy that advanced level students report a number of technical difficulties rather than musical challenges. On basis of the foregoing, it can be said that the strategies developed for musical performance by advanced level students, who develop a large number of strategies for that purpose, help them achieve successful results in terms of musicality.

As for the correction of intonation mistakes, beginner level students often fail to notice if they have achieved the correct intonation while intermediate level students occasionally fail to notice the same. In order to make sure that they find the correct intonation, they refer to a number of methods such as listening to other records, repeating playing the piece from the beginning, recording their performance, checking the notes on the closed positions by comparing them to the same notes on the open position, and using a tuner. When the students notice that they have failed to achieve the correct intonation, they try methods such as repeating playing the piece from the beginning, finding the correct intonation by ear, and playing chords. On the other hand, it was revealed that advanced level cello students do not encounter too much intonation problems.

As for the correction of rhythm- *usul* mistakes, all of the beginner and intermediate level cello students were revealed to experience problems while very few advanced level students experience the same problems. Beginner level cello students reported that, as for the problems they experience with rhythms and *usuls*, they try to solve such problems by asking their instructor, listening and imitating. Intermediate level cello students stated that they try to overcome the problems they experience with Turkish Music *usuls* and rhythms by referring to a number of methods such as practicing solfege, practicing *usuls*, repetition, recording their own performance, listening to other performances and accompanying. Advanced level students reported that they usually do not experience problems with *usuls* and rhythms.

The highest number of opinions on the problems with the cello technique are stated by intermediate level students. It was understood that beginner and intermediate level cello students always check their own posture - hold. In order to correct their posture - hold, beginner level students refer to a number of methods such as practicing in front of a mirror and doing finger exercises, while intermediate level students try practicing in front of a mirror and watching performances of professional cellists. Advanced level students have incorrect posture - hold usually when the piece requires agility or they have difficulty. These students reported that they do not have difficulty with noticing or correcting their posture - hold and they do not implement any special strategy on this subject, and that they just need to remember their past knowledge of how they can correct their posture - hold. It was found out that intermediate level students follow the strategies of 'practicing etudes' and 'thinking over' in order to solve their technical problems; while intermediate level cello students do not experience much problem in technical terms.

Advanced performance strategies are categorized under three themes in frame of this study, which are: 'strategies related to the factors determined by the performer', 'strategies related to musical performance ability' and 'time saving strategies'. Whereas, the category of 'factors determined by the performer' under this study is examined under two sub-categories as 'writing finger numbers' and 'writing legatos'. Beginner level students reported that positions, finger numbers and legatos they will use are determined by their instructors and thus the students themselves could not develop a strategy on the subject. Intermediate level cello students are usually seen to follow the trial and error method until they find the correct finger numbers. They usually take the principles of 'easiness' and 'minimum movement' as basis to conclude that the finger numbers determined are correct. Advanced level cello students, on the other hand, followed a strategy that gives priority to musicality when determining positions and finger numbers, and ensures that they are 'kept in memory

without being written on the note'. Although each of the students consider different criteria important in terms of musicality, the most commonly stated opinions point out to playing legatos and avoiding open strings for playing the notes.

Intermediate level students are divided into two sub-groups, including students who do not pay attention to legatos and students who develop strategies on the subject. Intermediate level students using strategies on this subject stated that they determine legatos according to *usuls* or rhythms. Some of the advanced level students develop particular legato styles according to the *usul*, apply bow pull for the accented stroke, take the legatos of violins as basis in order to play in harmony with the strings, and determine legatos according to musical movements and how the piece sounds. All of the mentioned strategies are remarkable in the sense that they emphasize how diverse criteria are taken into consideration for writing legatos in cello performance in Turkish Music. Considering the fact that there is such a variety of legato styles used in performance of the same musical piece on the same instrument, it can be said that one of the factors creating the diversity in individual cello performance characteristics in Turkish Music is 'legato styles'.

Opinions on the strategies related to musical performance ability were most commonly stated by intermediate and advanced level students. Beginner level students mainly reported that they have not reached the required level to play with musicality, but they think that imitating, knowing the *maqam* and personal interest in the musical piece are influential in musicality. It was found out that intermediate level cello students try to play with musicality by referring to a number of methods such as listening, repeating, and determining the best positions and finger numbers to reflect the feeling of the *maqam*. Whereas, advanced level students reported that they try to achieve musicality by listening, accompanying, memorizing, playing the notes on closed positions, and choosing the register, bowing techniques and legatos depending on local and periodical characteristics.

With regard to time saving strategies, beginner level students refer to methods such as listening to performances of a particular piece, intermediate level students refer to methods such as considering technical and musical requirements together, and advanced level students refer to methods such as deciphering, mastering difficult rhythms, identifying similar rhythms and sentences and repeating them. In addition to the foregoing, the majority of the students interviewed stated that they do not place their instruments in the case so that they save time by playing their instrument more often with less breaks.

Kaynakça

- AÇIKGÖZ, K. Ü. (1996). *Etkili öğrenme ve öğretme*, İzmir: Kanyılmaz Matbaası.
- AKIN, Ö. (2013). Müzik öğretmeni adaylarının öğrenme stratejilerini kullanma durumları (Pamukkale Üniversitesi örneği). *YYÜ Eğitim Fakültesi Dergisi*, X (1), pp.1-10.
- ALTINTAŞ, S., KABARAN, H. ve KABARAN, G. G. (2016). Sınıf öğretmeni adaylarının kullandıkları öğrenme stratejileri üzerine bir durum araştırması. *Journal of Kirsehir Education Faculty*, 17(3), pp.157-176.
- BERG, K. E., & LATIN, R. W. (2008). *Essentials of research methods in health, physical education, exercise science and recreation* (3rd ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.
- CANGRO, R. M. (2004). *The effects of cooperative learning strategies on the music achievement of beginning instrumentalists*. (Unpublished Doctoral Dissertation). Available from ProQuest Dissertations and Theses database, UMI No. 3139428.
- ÇELİKKAYA, T. (2010). Sosyal bilgiler öğretmen adaylarının kullandıkları öğrenme stratejileri. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi*, 11(3), pp.65-84.
- DENİZ, J. (2015). Müzik öğretmeni adaylarının bilişötesi öğrenme stratejilerini kullanma düzeyleri. *Akademik Sosyal Araştırmalar Dergisi*, 3(14), pp.1-14.
- GEIERSBACH, F. J. (2000). Musical thinking in instrumental practice: An investigation of practice strategies used by experienced musicians. Dissertation Abstracts International, 61, 6, AAT. UMI No. 9976723.
- HAGANS, W. W. (2004). Musicians' learning styles, learning strategies and perceptions of creativity. Doctoral dissertation, University of Oklahoma State.
- HANBERRY, M. A. (2004). Effects of practice strategies, metronome use, meter, hand, and musical function on dual-staved piano performance accuracy and practice time usage of undergraduate non-keyboard music majors. Doctoral dissertation, UMI No. 3136174.
- JØRGENSEN, H. (2004). Strategies for individual practice. In Williamon A. (Ed.), *Musical excellence: Strategies and techniques to enhance performance* (pp. 85–103). New York, NY: Oxford University Press.
- KARASAKALOĞLU, N. (2012). Sınıf öğretmeni adaylarının okuduğunu anlama stratejileri ile öğrenme ve ders çalışma stratejileri arasındaki

- ilişki. *Kuram ve Uygulamada Eğitim Bilimleri (KUYEB)*, 12(3), pp.1921-1950.
- KENNY, D. T. (2006). Musical Excellence: Strategies and techniques to enhance performance. *Advances in Cognitive Psychology*, 2 (2-3), pp.233-237.
- KOCAARSLAN, B. (2016). *Profesyonel müzik eğitiminde bilinçli farkındalık, öğrenme stratejileri ve öğrenme stilleri* (Yayımlanmamış Doktora Tezi). Marmara Üniversitesi Eğitim Bilimleri Enstitüsü, İstanbul.
- KOCABAŞ, A. (1995). *İşbirlikli öğrenmenin blok flüt öğretimi ve öğrenme stratejileri üzerindeki etkileri* (Yayımlanmamış Doktora Tezi). Dokuz Eylül Üniversitesi Sosyal Bilimleri Enstitüsü, İzmir.
- KÖKLÜ, N. (1994). Örnek olay çalışma metodları. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 27(2), pp.771-779.
- KUZU, S., BALAMAN, F. ve CANPOLAT, M. (2014). Eğitim fakültesi öğrencilerinin öğrenme stratejilerinin belirlenerek bölümlere göre karşılaştırılması. *Eğitim ve Öğretim Araştırmaları Dergisi*, 3(2), pp.257-264.
- LEEDY, P. D., & ORMROD, J. E. (2005). *Practical research: planning and design* (8th ed.). Upper Saddle River, NJ: Pearson / Merrill / Prentice Hall.
- MARIS, B. E. (2000). *Making Music at the Piano: Learning Strategies for Adult Students*. New York: Oxford University Press.
- MARTIN, D. (2005). Musical Excellence: Strategies and Techniques to Enhance Performance. *Music Educators Journal*, 92 (2), pp.21.
- MERRIAM, S.B. (1988). *Case Study Research in Education A Qualitative Approach*. San Francisco, CA, US: Jossey-Bass Publishers.
- NEUENDORF, K. A. (2002). *The content analysis guidebook*. Thousand Oaks, CA: Sage.
- NIELSEN, S. G. (1999a). Regulation of learning strategies during practice. *Psychology of Music*, 27 (2), pp.218–229.
- NIELSEN, S. G. (1999b). Learning strategies in instrumental music practice. *British Journal of Music Education*, 16 (3), pp.275–291.
- NIELSEN, S. G. (2004). Strategies and self-efficacy beliefs in instrumental and vocal individual practice: A study of students in higher music education. *Psychology of Music*, 32 (4), pp.418-431.

- NIELSEN, S. G. (2008). Achievement goals, learning strategies and instrumental performance. *Music Education Research*, 10 (2), pp.235-247.
- SEPPÄNEN, M., BRATTICO, E., & TERVANIEMI, M. (2007). Practice strategies of musicians modulate neural processing and the learning of sound-patterns. *Neurobiology of Learning and Memory*, 87(2), pp.236-247.
- SIKES, P. L. (2013). The effects of specific practice strategy use on university string players' performance. *Journal of Research in Music Education*, 61 (3), pp.318-333.
- STEWART, C., J. & CASH, W. B. (1997) *Interviewing: principles and practices* (8th ed.). New York: McGraw Hill, New York, McGraw Hill.
- SÜNBÜL, A. M. (2011). *Öğretim ilke ve yöntemleri* (5. baskı). Konya: Eğitim Kitabevi Yayınları
- SWANSON, H. L. (1990). Influence of metacognitive knowledge and aptitude on problem solving. *Journal of Educational Psychology*, 82(2), pp.306-314.
- SWEENEY, C. M. (2010). *The metacognitive functioning of middle school students with and without learning disabilities during mathematical problem solving* (Unpublished Doctoral Dissertation), Miami University, Retrieved from http://scholarlyrepository.miami.edu/cgi/viewcontent.cgi?article=1432&context=oa_dissertations
- ŞARA, P. (2012). *Sınıf öğretmeni adaylarının öğrenme ve ders çalışma stratejileri, problem çözme becerileri ve denetim odağı düzeylerinin çeşitli değişkenler açısından incelenmesi* (Yayımlanmamış Yüksek Lisans Tezi). Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.
- TAŞÇI, G ve SORAN, H. (2012) Yüksek öğretim biyoloji öğrencilerinin öğrenme stratejileri ve bilişsel yapılarının incelenmesi, *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 42, pp.394–405.
- VEENMAN, M. V. J., & SPAANS, M. A. (2005). Relation between intellectual and metacognitive skills: Age and task differences. *Learning and Individual Differences*, 15(2), pp.159-176.
- UYGUN, M. A. ve KILINÇER, Ö. (2012). Piyano repertuvarının öğrenilmesinde öğrenme stratejilerinin kullanılma düzeylerinin bazı değişkenlere göre incelenmesi: Güzel sanatlar ve spor liseleri örneği. *International Journal of Human Sciences*, 9 (1), pp.965-992.

- UYGUN, Y. S. (2017). *Müzik öğretmeni adaylarının ud dersindeki repertuarı çalışırken ve öğrenirken kullandıkları stratejilerin incelenmesi* (Yayımlanmamış Yüksek Lisans Tezi). Niğde Ömer Halisdemir Üniversitesi Eğitim Bilimleri Enstitüsü, Niğde.
- UYGUN, M. A. ve KILINÇER, Ö. (2018). Mesleki müzik eğitimi öğrencilerinin enstrümantal müziği çalışırken ve öğrenirken kullandıkları stratejilerin incelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (47), pp.317-339.
- WEINSTEIN, C. E. & MAYER, R. E. (1986). The teaching of learning strategies. In M. C. Wittock (Ed.), *Handbook of Research on Teaching* (pp. 315-327). New York: Macmillan Company.
- YOKUŞ, H. (2009). Piyano eğitiminde öğrenme stratejilerinin kullanılmasına yönelik etkinliklerin performans başarısına ve üstbilişsel farkındalığa etkisi. Doktora tezi, Marmara Üniversitesi, İstanbul, Türkiye.